and $2+1$; then $3^2.2731.(22366891).\sqrt{22366891}=4620$ limit of divisors of the form prime $8mnx+1$ and $8mnx+(6mn+1)=312x+1$ and $312x+235$, and they are 313, 547, 859, 937, 1171, 1249, 1483, 1873(2731)3121, 3433, 4057, 4603 to limit, none of which will divide the balance, hence 22366891 is prime.

$\therefore$ factors are $3^2 \times 2731 \times 22366891$.

No solution of Problem 33 has been received.

PROBLEMS.

43. Proposed by M. A. GRUBER, A. M., War Department, Washington, D. C.

Find the series of integral numbers in which the sum of any two consecutive terms is the square of their difference.

44. Proposed by A. H. HOLMES, Box 963. Brunswick, Maine.

The hypotenuse of a right-angled triangle ABC, right-angled at A, is extended equally at both extremities so that $BE=CD$. Draw AD and AE. Find integral values for all the lines in the figure thus made.

AVERAGE AND PROBABILITY.

Conducted by B. F. FINKEL, Springfield, Mo. All contributions to this department should be sent to him.

NOTE ON AVERAGE AND PROBABILITY WITH REFERENCE TO THE SOLUTIONS OF PROBLEM 26, pp, 282-83, AND 327-28.

By ARTEMAS MARTIN, LL. D., U. S. Coast and Geodetic Survey Office, Washington D. C.

I WILL remark at the outset that, unfortunately, mathematicians are not agreed as to the method of solving certain problems in Average and Probability. The difference of opinion in some cases relates to the interpretation of the meaning of the problem, and in others to the quantity that should be considered as the independent variable, and between what limits taken, and again as to whether the "points" are uniformly distributed along a certain line or over a certain surface, etc.

If points be uniformly distributed on a line, the *number* of points is proportional to the length of the line; and if points be uniformly distributed over a surface, the number of points is *proportional* to the area of the surface, etc.; but if the points be *not* uniformly distributed, then the line or surface can not be taken as a *true* measure of the number of points.

Problem 26. "Find the average of all right-angled triangles having a given hypotenuse."